

U.S. Army Center for Health Promotion and Preventive Medicine

A SOLDIER'S GUIDE TO STAYING HEALTHY IN CENTRAL AMERICA

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INTRODUCTION

This country-specific guide should be used in conjunction with [GTA 08-05-062, Guide to Staying Healthy](#), and is intended to provide information that can help reduce your risk of Disease and Non-battle Injuries (DNBI) when deployed. This health threat and countermeasure information is based on the most current data available from U.S. Department of Defense medical agencies at the time of production. In addition to the information in this guide, you should also receive force health protection, health threat, and preventive medicine countermeasures training/briefings prior to and, as required, throughout the length of your deployment.

CENTRAL AMERICA OVERVIEW

Central America includes the countries of [Belize](#), [Costa Rica](#), [El Salvador](#), [Guatemala](#), [Honduras](#), [Nicaragua](#), and [Panama](#). The region is bordered by the Caribbean Sea in the east and the Pacific Ocean in the west. The northeastern border is composed of extensive lowlands that form the southern edge of the Yucatan Peninsula. A narrow coastal plain extends southward along the Caribbean Sea except for the Mosquito Coast of Honduras and Nicaragua, which is composed of extensive flood plains and valleys, with numerous shallow bays, lagoons, and salt marshes. The southern border of the region is composed of narrow coastal strips. A mountainous interior dominates the region except for the Great Rift in Nicaragua, which is partly occupied by two large freshwater lakes, Lake Managua and Lake Nicaragua. The western border is composed of a narrow coastal strip interspersed with coastal highlands and many active volcanoes. The borders of the region include the Caribbean Sea in the east, Colombia in the south, the Pacific Ocean in the west, and Mexico in the north. The elevation ranges from sea level along the Caribbean Sea and Pacific coasts to nearly 14,000 feet above sea level at the Tajumulco volcano in Guatemala. The region has a tropical wet climate with average minimum and maximum year-round temperatures of 60° to 90° F, respectively, with cooler temperatures in the higher elevations. At more than 6,500 feet above sea level, temperatures can fall close to freezing at night, and frost sometimes occurs. The rainy season is generally May through October. Rainfall varies considerably and is dependent on location and elevation with an average range of 40-250 inches per year. Earthquakes are frequent. Damaging hurricanes and tropical storms with flooding are common and can occur from the summer through the fall.

CENTRAL AMERICA RISK ASSESSMENT

Based on a combination of all major infectious diseases that occur in a country, an [overall country risk level](#) is assigned as low, intermediate, high, or highest risk. This region is INTERMEDIATE RISK for infectious diseases except for El Salvador, which is HIGH RISK. Diseases of military importance to forces deployed to Central America include [hepatitis A and E](#), [typhoid fever](#) and several diarrheal diseases to include [cholera](#), all acquired by consuming contaminated food, water, and dairy products; vector-borne diseases such as [malaria](#), [dengue fever](#), [American trypanosomiasis](#) (Chagas disease), and [leishmaniasis](#), which are acquired through the bites of insects and ticks; [leptospirosis](#) from swimming, wading, or other skin contact with contaminated water; [rabies](#) from animal contact; [tuberculosis](#) from contact with human respiratory secretions or droplets; and [sexually transmitted diseases](#). Environmental factors also pose a significant health risk to deployed forces and include sewage, agricultural, and industrial contamination of water and food supplies and localized air pollution. Additionally, high altitude illnesses are a potential DNBI in the mountainous regions.

INCREASED REGIONAL DISEASE THREATS

Annual hurricane and tropical storm destruction of an already weak regional public infrastructure increases the potential for infectious disease transmission throughout the region.

There is significant risk in this region for acquiring incapacitating mosquito-borne diseases including dengue fever and malaria. Both are transmitted by mosquitoes that exist throughout the region year-round, in both urban and rural areas, and that feed day and night, indoors or out. The risk for dengue fever is highest in urban environments; the risk for malaria is highest in rural areas. Large epidemics of dengue fever occur at irregular intervals. Risk of dengue fever is increased during the rainy months when the mosquito population increases, particularly in northern coastal urban areas. In the past, malaria rates have increased tenfold or more following hurricanes in the region. The risk for malaria is highest in the northern coastal lowlands and along the border with Nicaragua. Preventing exposure to mosquitoes and other biting vectors at all times and in all areas will help reduce your risk of acquiring vector-borne diseases.

Lakes, streams, and irrigated fields may be heavily infected with leptospirosis. You are at increased risk if you take part in operations or activities that involve extensive water contact, especially in Panama.

FIELD SANITATION TEAM

Each company-sized unit has a Field Sanitation Team (FST) whose members are trained (40-hour course) and fully equipped IAW [AR 40-5](#), [FM 4-25.12](#), and [FORSCOM REG 700-2](#). Know who the members of your FST are, and know how they can assist in preventing medical threats to your health. Become familiar with FST equipment and training.

VECTOR-BORNE DISEASES

There are several vector-borne diseases present in Central America. They include [malaria](#) and [dengue fever](#) from mosquitoes; [leishmaniasis](#) from sand flies; and [American trypanosomiasis](#) from “kissing bugs.” There are many other diseases spread by the bites of mosquitoes, ticks, sand flies, fleas, mites, and lice. Your local medical authority will determine if these diseases or other vector-borne diseases are a threat in your specific location and provide appropriate countermeasures.

- Take your malaria prevention pills when directed to do so. This is CRITICAL. Malaria is widespread in this region. Normally, you will begin taking medication prior to arriving in the area, while in the area, and after returning home.
- Use the [DOD Insect Repellent System](#) detailed in [GTA 08-05-062](#) to reduce your risk of acquiring a vector-borne disease. Wear permethrin-treated uniforms with trousers tucked into boots, sleeves rolled down, and undershirt tucked into trousers. Wear DEET on exposed skin.

- When deployed to this region, [sleep under a permethrin-treated bed net](#) to repel insects and further reduce risks of vector-borne diseases. Many insects in this region feed during the night, including mosquitoes that transmit malaria.
- When using both DEET and sunscreen products, apply sunscreen to the skin first so it does not interfere with the effectiveness of the DEET. After 30 minutes to an hour, apply the DEET. This allows the sunscreen to penetrate and bind to the skin first.

FOOD-BORNE AND WATER-BORNE DISEASES

In the past 5 years, hurricanes have caused severe localized contamination of water systems, particularly in the central areas of the region. The diseases of greatest risk throughout the region, in both rural and urban areas, are bacterial diarrhea, hepatitis A, and typhoid fever associated with contaminated food, water, and/or ice. Do not consume any food, water, or beverages (to include bottled water) that have not been approved by the U.S. military. Assume all non-approved food, ice, and water is contaminated. Water and food items available in this region, including dairy products, fish, fruits, and vegetables, may contain unsafe levels of pesticides, chemical fertilizers, bacteria, and viruses. Contamination with human or animal waste is widespread. Even a one-time consumption of these foods or water may cause severe illness. See [GTA 08-05-062](#) for appropriate countermeasures.

SEXUALLY TRANSMITTED DISEASES

[Sexually transmitted diseases](#) are highly prevalent in this region. Gonorrhea, chlamydia, and other infections are common, and may affect a high percentage of personnel who have sexual contact. Human immunodeficiency virus (HIV) and hepatitis B also occur. Though the immediate impact of HIV and hepatitis B on an operation is limited, the long-term impact on your individual health is substantial. See [GTA 08-05-062](#) for appropriate countermeasures.

HOT AND COLD WEATHER INJURIES

Heat injury can occur in individuals not acclimated to the climate. Heat injuries are more likely to occur during the early phase of deployment. Individual and unit countermeasures are extremely important. Cold injuries can also occur in the mountainous areas of this region. The effects of cold weather are more severe in high mountainous areas due to reduced oxygen and lower air pressure. When deploying to the mountainous areas in this region, check with your unit on the requirement for packing the extended cold weather clothing system. See [GTA 08-05-062](#) for appropriate countermeasures.

HAZARDOUS ANIMALS AND PLANTS

- Several species of highly poisonous snakes, which are well camouflaged and very aggressive, live in the region. Consider any snake encountered as poisonous, and do not handle. Seek immediate medical attention if bitten; untreated snakebites may cause serious illness or death within 1 hour.

- Several species of poisonous scorpions and spiders are present throughout the region. If possible, avoid sleeping on the ground. Shake out boots, bedding, and clothing prior to use, and never walk barefoot. If bitten or stung, seek medical attention immediately.
- Some regional plants have thorns, stinging hairs, or toxic resins that may puncture the skin or introduce poison into the skin causing skin irritation, rashes or infections. Avoid skin contact with plants when tactically feasible.
- Contact with the smoke from the burning of these plants can also cause skin rashes and damage to your lungs.
- Clean your clothing after contact with harmful plants. Decontaminate clothing by washing with soap and water.
- Some regional plants may cause systemic poisoning if leaves, berries, flowers, or other plant parts are chewed or swallowed. Symptoms include dizziness, vomiting, irregular heartbeat, and delirium or hallucinations.

TOXIC INDUSTRIAL CHEMICALS AND MATERIALS

When deployed, you may face health risks from industrial chemicals and materials as a result of activities by terrorists or warring parties; accidents related to improper design, maintenance, or operation of indigenous industrial facilities; inadvertent exposure to toxic waste materials in the environment; or improper handling or disposal of hazardous material with which our own forces deploy. The degree of health risks depends upon many parameters. Consult your medical authority for additional information.

SKIN DISEASES

Skin irritations and infections, such as athlete's foot and ringworm, are common medical threats during any deployment and are commonly caused by fungi. The best prevention is to maintain clean, dry skin. See [GTA 08-05-062](#) for additional countermeasure information.

HIGH ELEVATIONS

High altitude illnesses can kill. Military operations occurring at elevations over 6,000 feet can seriously impact unit and individual effectiveness. Serious illness or death can result if you ascend rapidly without allowing for acclimatization. Remain well hydrated; individual water requirements are greater at higher altitudes.

- When deployed to high mountain areas, be observant of the common symptoms of mountain sickness: headache, nausea, vomiting, dizziness, fatigue, irritability, and coughing. Seek medical attention immediately if you experience any of these symptoms.
- Pyridostigmine bromide tablets may increase the chance of dizziness or fainting during the first 24 hours at high altitude if you are not acclimatized.
- Lower oxygen levels at high altitudes ("thin air") combined with the heavier work requirements when wearing mission-oriented protective posture (MOPP) gear can

increase your risk of high altitude illnesses. When wearing MOPP gear at higher altitudes, you may require more time and concentration to perform assigned tasks.

- For appropriate countermeasures during high altitude operations, see [GTA 08-05-062](#) and [GTA 08-05-060, A Soldier's Guide to Staying Healthy at High Elevations](#).

HEARING PROTECTION

It is essential that you use properly fitted hearing protection during military operations. Exposure to high-intensity noise may cause hearing loss that can adversely affect your combat effectiveness and individual readiness. Good hearing is essential to mission success. If you are a dismounted soldier, the [Combat Arms Earplug](#) (NSN 6515-01-466-2710) will protect you from the impact noise of weapons fire while only slightly interfering with voice communications and detection of combat sounds such as vehicle noise, footfalls in leaves, and the closing of a rifle bolt. While not as effective as the Combat Arms Earplug in preserving your ability to hear important mission-related sounds, noise muffs or standard earplugs are very effective in preventing noise-induced injury. If you are a member of vehicle or helicopter crews, your combat vehicle crew or aircrew helmets have built-in hearing protectors.

ORAL HEALTH

Dental disease is a common problem during deployments due to the challenge of maintaining good oral hygiene. You should deploy with toothbrush, dental floss, and fluoride toothpaste. Daily flossing and twice daily brushing of teeth is the best way to ensure prevention of periodontal disease and to decrease your risk of problems such as trench mouth and tooth decay. In difficult tactical environments, teeth should be brushed at least once a day. Seek medical attention immediately at the onset of any dental problems.

PRE-DEPLOYMENT HEALTH INFORMATION

- [Complete the Pre-Deployment Health Assessment \(DD FORM 2795\)](#) to assess your state of health before deployment and to assist health care providers in identifying your medical needs and providing present and future medical care to you.
- You will not have access to your health care record during the deployment. The Adult Preventive and Chronic Care Flowsheet ([DD FORM 2766](#)) will be used as your deployment health record. This document will include information on all your immunizations, any medications you are currently taking, and any ongoing medical problems that you may have. When you go through readiness processing, ensure that all appropriate information is documented on your DD FORM 2766. When you return home, this information will be placed in your regular health record.

INFORMATION ABOUT YOUR HEALTH CARE WHILE DEPLOYED

- It is important that you know where to seek health care while deployed. This may or may not be through the same channels as your home station. Ask your chain of command for more information.
- While deployed, you must maintain your health and seek care whenever an illness or injury threatens your ability to complete your tasks. Your unit is depending on you. It is always better to seek care early so that your problems can be documented appropriately and taken care of immediately.

POST-DEPLOYMENT HEALTH INFORMATION

- [Complete the Post-Deployment Health Assessment \(DD FORM 2796\)](#) to assess your state of health after deployment and to assist health care providers in identifying your medical needs and providing present and future medical care to you.
- If you become sick after you return home, tell your physician that you were deployed.
- Complete malaria medications as directed, and receive follow-on medical care/tests as directed.

Contact your Preventive Medicine or Medical Support Unit for more information.



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